

PROGRAM SUMMARY

ARVO 2014

LEADING EYE AND VISION RESEARCH
MAY 4 – 8 | ORLANDO, FLORIDA

ARVO 2014 Annual Meeting

Orange County Convention Center

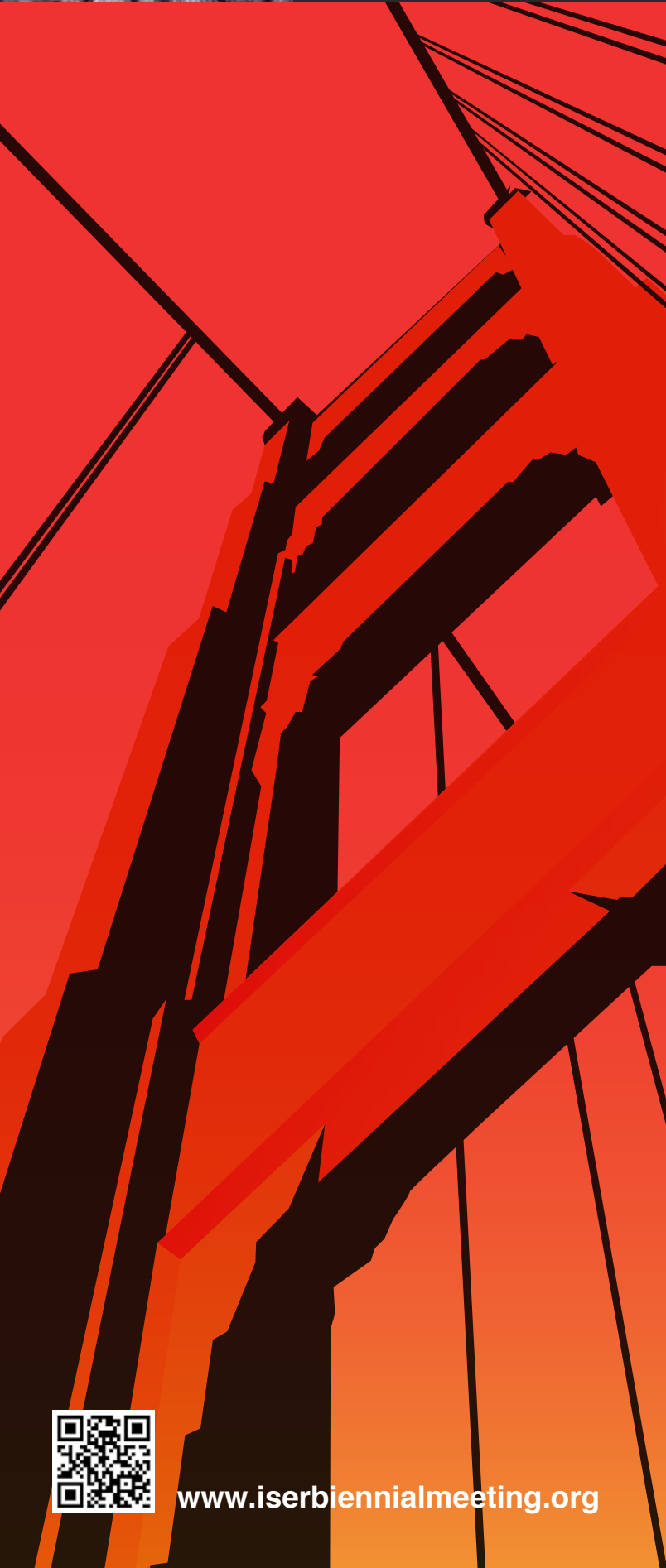
South Building

Orlando, Florida

May 4 – 8, 2014



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XXI BIENNIAL MEETING

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JULY 20–24, 2014

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Meeting Highlights Include:

- Stimulating scientific program
- Interdisciplinary symposia
- Ample time for informal interaction
- Plenary lectures
- Poster sessions
- Networking opportunities between young investigators and senior scientists
- Social events

Section Topics:

- Cornea and Ocular Surface
- Glaucoma
- Ocular Imaging
- Ocular Immunology
- Ocular Lens
- Ocular Motility and Strabismus
- Physiology and Pharmacology
- RPE Biology and Pathology
- Retinal Cell Biology
- Retinal Neuroscience and Development



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ISER 2014 Meeting Program Chairs:
Suraj Bhat, PhD and David Williams, PhD,
Jules Stein Eye Institute, UCLA.



International Society
for Eye Research

Program OVERVIEW

Saturday, May 3	Room	Time
Registration	Level 2/South Lobby A	7am–6pm
ARVO/ISIE Imaging Conference [†]	S 310	8am–5:30pm
ARVO Education Courses [†]		
Metabolic Networks in the Aging Eye	S 230GH	8:30am–12pm
Diabetic Retinopathy	S 210A-C	8:30am–4:30pm
Cell Therapy in Ocular Disease	S 230A-D	8:30am–4:30pm
Corneal Biomechanics	S 210DE	8:30am–4:30pm
Tissue Diagnosis in Ophthalmology	S 230EF	8:30am–4:30pm
Telehealth Methods for Eye Disease	S 230GH	1–4:30pm
ARVO Foundation/Dowling Society Gala [†]	Hyatt Regency Orlando (Peabody)	7–10pm
Sunday, May 4		
Registration	Level 2/South Lobby A	7am–6pm
ARVO Central	Level 1/South Hall A	7am–6pm
Exhibits/Optional Exhibit Hours**	Level 1/South Hall A	7:30–9am**/9am–4pm (all exhibits open)/4–5pm**
Symposia	See Program	8:30–10:30am
Posters/All Posters Session	Level 1/South Hall A	8:30–10:15am/10:45–11:45am*/1:30–3:15pm/3:15–5pm
Opening Keynote Session – Barry Marshall, Nobel Laureate	Level 1/South Hall B	12noon–1:15pm
Pizza with the Experts [†]	S 210A-C	1:30–3pm
EVER/ARVO Workshop	S 320GH	1:30–3pm
SIGs/Workshops	See Program	1:30–3pm
Multidisciplinary Ophthalmic Imaging Group	S 210DE	1:30–3pm
Papers	See Program	3:15–5pm
Basic Clinical Lecture	Level 1/South Hall B	5:15–7:15pm
ARVO Social featuring ARVO Rocks! [†]	Universal Studios Florida [®]	7:30am–10:30pm
Monday, May 5		
Registration	Level 2/South Lobby A	7am–6pm
ARVO Central	Level 1/South Hall A	7am–6pm
Exhibits/Optional Exhibit Hours**	Level 1/South Hall A	7:30–9am**/9am–4pm (all exhibits open)/4–5:30pm**
NAEVR Briefing	S 329	7:30–8:30am
Posters/All Posters Session	Level 1/South Hall A	8:30–10:15am/11am–12:45pm/2:45–3:45pm*/3:45–5:30pm
Papers/Minisymposia	See Program	8:30–10:15am/11am–12:45pm/3:45–5:30pm
Section Business Meetings	See Program	10:15–10:55am
SIGs/Workshops	See Program	1–2:30pm
Genetics Group	S 210DE	1–2:30pm
China–US Networking Forum	S 210A-C	1–2:30pm
Proctor Award Lecture	Level 1/South Hall B	5:45–6:30pm
Weisenfeld Award Lecture	Level 1/South Hall B	6:45–7:30pm
Student/Trainee Social	Hilton Orlando, Fountain Plaza	7:30–9pm
Tuesday, May 6		
Registration	Level 2/South Lobby A	7am–6pm
ARVO Central	Level 1/South Hall A	7am–6pm
Exhibits/Optional Exhibit Hours**	Level 1/South Hall A	7:30–9am**/9am–4pm (all exhibits open)/4–5:30pm**
Posters/All Posters Session	Level 1/South Hall A	8:30–10:15am/11am–12:45pm/2:45–3:45pm*/3:45–5:30pm
Papers/Minisymposia	See Program	8:30–10:15am/11am–12:45pm/3:45–5:30pm
Research Grant Administrators Program	S319	8am–5pm
ARVO Foundation WEAVR Silent Auction	Level 1/South Hall A	9:30am–3:45pm
General Business Meeting	S 230GH	10:15–10:55am
SIGs/Workshops	See Program	1–2:30pm
Low Vision Group	S 210DE	1–2:30pm
ARVO Foundation WEAVR Luncheon [†]	Level 1/South Hall B	1–2:30pm
Where are the Women? Exploring Roles in ARVO	S 320AB	5:30–7pm
Wednesday, May 7		
Registration	Level 2/South Lobby A	7am–6pm
ARVO Central	Level 1/South Hall A	7am–6pm
Breakfast with the Experts [†]	S 210A-C	7–8:30am
Exhibits/Optional Exhibit Hours**	Level 1/South Hall A	7:30–9am**/9am–4pm (all exhibits open)/4–5:30pm**
Posters/All Posters Session	Level 1/South Hall A	8:30–10:15am/11am–12:45pm/2:45–3:45pm*/3:45–5:30pm
Papers/Minisymposia	See Program	8:30–10:15am/11am–12:45pm/3:45–5:30pm
NEI/Audacious Goals Update	Level 1/South Hall B	10:15–10:55am
SIGs/Workshops	See Program	1–2:30pm
Nanotechnology and Regenerative Medicine Group	S 210DE	1–2:30pm
Cogan Award Lecture	Level 1/South Hall B	5:45–6:30pm
Friedenwald Award Lecture	Level 1/South Hall B	6:45–7:30pm
Classical Concert	Hyatt Regency Orlando (Peabody)	8–10pm
ARVO Karaoke Night	ICEBAR Orlando	9pm–12midnight
Thursday, May 8		
Registration	Level 2/South Lobby A	7am–2pm
ARVO Central	Level 1/South Hall A	7am–2pm
Symposia	See Program	8:30–10:30am
Posters/All Posters Session	Level 1/South Hall A	8:30–10:15am/10:45–11:45am*/12noon–1:45pm
Denver Kickoff Reception	Level 1/South Hall A	10:45–11:45am
Papers	See Program	12noon–1:45pm
ARVO/Alcon Keynote Series — Jean Bennett, MD, PhD, FARVO	Level 1/South Hall B	2–3:15pm

† Separate registration required * All Posters— all first authors will be present for the first hour

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Important Policies

Use of recording/photography/audiotape/video equipment: Recording by any means (photographing, audiotaping, videotaping) of any presentations or sessions at any ARVO Meeting is prohibited, except by an ARVO-authorized agent for official purposes or by First Authors who want to photograph their own poster presentations. Violators risk confiscation of their equipment and/or dismissal from the Annual Meeting as deemed appropriate by ARVO.

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Clinical Trials Registration Policy: All clinical trials that will be reported in ARVO Annual Meeting abstracts must be registered on a publicly available database. The required acknowledgement of the First Author, acting as the authorized agent for all authors, certifies that any research presented in the abstract that reports on a clinical trial must be registered, and the registration location and number must be included on the abstract, in compliance with the ARVO Statement on Registering Clinical Trials, arvo.org/clinicaltrials. For more information on this policy, refer to the Clinical Trials Registration Index at arvo.org/amindices.

Program Summary

The *Program Summary* is distributed onsite to all ARVO Annual Meeting participants. Abstracts are referred to in the *Program Summary* by program number (not page number) and session number. Abstracts may be viewed and printed either individually or by session at arvo.org/Annual_Meeting/Program. Additional program search tools linked from arvo.org/Annual_Meeting/Program:

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- ARVO 2014 Abstract Search: Search the complete 2014 program by keyword, author, moderator and more. Not recommended for building an itinerary; it will not sync with the Online Planner or Mobile App.

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See arvo.org/amindices for:

- ARVO Commercial Relationships Policy
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- Statement on Registering Clinical Trials
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Children in the Convention Center

Children under 18 years old must be accompanied by a parent or guardian at all times. Parents/guardians who bring children into paper sessions must remove them immediately if they become disruptive. Children are not allowed to accompany parents/guardians in sessions/events where tickets are required or food is provided, except events for which children's tickets are available for purchase. Under no circumstances are children permitted in the exhibit hall during set-up or dismantle times.

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TAKE IMMEDIATE ACTION WITH JETREA®

Permanent J-Code for JETREA®
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Effective January 1, 2014

Indication

JETREA® (ocriplasmin) Intravitreal Injection, 2.5 mg/mL, is a proteolytic enzyme indicated for the treatment of symptomatic vitreomacular adhesion (VMA).

IMPORTANT SAFETY INFORMATION

Warnings and Precautions

- A decrease of ≥ 3 lines of best-corrected visual acuity (BCVA) was experienced by 5.6% of patients treated with JETREA® and 3.2% of patients treated with vehicle in the controlled trials. The majority of these decreases in vision were due to progression of the condition with traction and many required surgical intervention. Patients should be monitored appropriately.
- Intravitreal injections are associated with intraocular inflammation/infection, intraocular hemorrhage, and increased intraocular pressure (IOP). Patients should be monitored and instructed to report any symptoms without delay. In the controlled trials, intraocular inflammation occurred in 7.1% of patients injected with JETREA® vs 3.7% of patients injected with vehicle. Most of the post-injection intraocular inflammation events were mild and transient. If the contralateral eye requires treatment with JETREA®, it is not recommended within 7 days of the initial injection in order to monitor the post-injection course in the injected eye.
- Potential for lens subluxation.
- In the controlled trials, the incidence of retinal detachment was 0.9% in the JETREA® group and 1.6% in the vehicle group, while the incidence of retinal tear (without detachment) was 1.1% in the JETREA® group and 2.7% in the vehicle group. Most of these events occurred during or after vitrectomy in both groups.
- Dyschromatopsia (generally described as yellowish vision) was reported in 2% of all patients injected with JETREA®. In approximately half of these dyschromatopsia cases, there were also electroretinographic (ERG) changes reported (a- and b-wave amplitude decrease).

Adverse Reactions

- The most commonly reported reactions ($\geq 5\%$) in patients treated with JETREA® were vitreous floaters, conjunctival hemorrhage, eye pain, photopsia, blurred vision, macular hole, reduced visual acuity, visual impairment, and retinal edema.

Please see Brief Summary of full Prescribing Information on adjacent page.

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03/14 OCRVMA0196



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JETREA.COM



JETREA™

(ocriplasmin)
Intravitreal Injection, 2.5 mg/mL

 **ThromboGenics®**



BRIEF SUMMARY OF FULL PRESCRIBING INFORMATION

Please see the JETREA® package insert for full Prescribing Information.

1 INDICATIONS AND USAGE

JETREA is a proteolytic enzyme indicated for the treatment of symptomatic vitreomacular adhesion.

2 DOSAGE AND ADMINISTRATION

2.1 General Dosing Information

Must be diluted before use. For single-use ophthalmic intravitreal injection only. JETREA must only be administered by a qualified physician.

2.2 Dosing

The recommended dose is 0.125 mg (0.1 mL of the diluted solution) administered by intravitreal injection to the affected eye once as a single dose.

2.3 Preparation for Administration

Remove the vial (2.5 mg/mL corresponding to 0.5 mg ocriplasmin) from the freezer and allow to thaw at room temperature (within a few minutes). Once completely thawed, remove the protective polypropylene flip-off cap from the vial. The top of the vial should be disinfected with an alcohol wipe. Using aseptic technique, add 0.2 mL of 0.9% w/v Sodium Chloride Injection, USP (sterile, preservative-free) into the JETREA vial and gently swirl the vial until the solutions are mixed.

Visually inspect the vial for particulate matter. Only a clear, colorless solution without visible particles should be used. Using aseptic technique, withdraw all of the diluted solution using a sterile #19 gauge needle (slightly tilt the vial to ease withdrawal) and discard the needle after withdrawal of the vial contents. Do not use this needle for the intravitreal injection.

Replace the needle with a sterile #30 gauge needle, carefully expel the air bubbles and excess drug from the syringe and adjust the dose to the 0.1 mL mark on the syringe (corresponding to 0.125 mg ocriplasmin). THE SOLUTION SHOULD BE USED IMMEDIATELY AS IT CONTAINS NO PRESERVATIVES. Discard the vial and any unused portion of the diluted solution after single use.

2.4 Administration and Monitoring

The intravitreal injection procedure should be carried out under controlled aseptic conditions, which include the use of sterile gloves, a sterile drape and a sterile eyelid speculum (or equivalent). Adequate anesthesia and a broad spectrum microbicide should be administered according to standard medical practice.

The injection needle should be inserted 3.5 - 4.0 mm posterior to the limbus aiming towards the center of the vitreous cavity, avoiding the horizontal meridian. The injection volume of 0.1 mL is then delivered into the mid-vitreous.

Immediately following the intravitreal injection, patients should be monitored for elevation in intraocular pressure. Appropriate monitoring may consist of a check for perfusion of the optic nerve head or tonometry. If required, a sterile paracentesis needle should be available.

Following intravitreal injection, patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment (e.g., eye pain, redness of the eye, photophobia, blurred or decreased vision) without delay [see Patient Counseling Information].

Each vial should only be used to provide a single injection for the treatment of a single eye. If the contralateral eye requires treatment, a new vial should be used and the sterile field, syringe, gloves, drapes, eyelid speculum, and injection needles should be changed before JETREA is administered to the other eye, however, treatment with JETREA in the other eye is not recommended within 7 days of the initial injection in order to monitor the post-injection course including the potential for decreased vision in the injected eye.

Repeated administration of JETREA in the same eye is not recommended [see Nonclinical Toxicology].

After injection, any unused product must be discarded.

No special dosage modification is required for any of the populations that have been studied (e.g. gender, elderly).

3 DOSAGE FORMS AND STRENGTHS

Single-use glass vial containing JETREA 0.5 mg in 0.2 mL solution for intravitreal injection (2.5 mg/mL).

4 CONTRAINDICATIONS

None

5 WARNINGS AND PRECAUTIONS

5.1 Decreased Vision

A decrease of ≥ 3 line of best corrected visual acuity (BCVA) was experienced by 5.6% of patients treated with JETREA and 3.2% of patients treated with vehicle in the controlled trials [see Clinical Studies].

The majority of these decreases in vision were due to progression of the condition with traction and many required surgical intervention. Patients should be monitored appropriately [see Dosage and Administration].

5.2 Intravitreal Injection Procedure Associated Effects

Intravitreal injections are associated with intraocular inflammation/infection, intraocular hemorrhage and increased intraocular pressure (IOP). In the controlled trials, intraocular inflammation occurred in 7.1% of patients injected with JETREA vs. 3.7% of patients injected with vehicle. Most of the post-injection intraocular inflammation events were mild and transient. Intraocular hemorrhage occurred in 2.4% vs. 3.7% of patients injected with JETREA vs. vehicle, respectively. Increased intraocular pressure occurred in 4.1% vs. 5.3% of patients injected with JETREA vs. vehicle, respectively.

5.3 Potential for Lens Subluxation

One case of lens subluxation was reported in a patient who received an intravitreal injection of 0.175 mg (1.4 times higher than the recommended dose). Lens subluxation was observed in three animal species (monkey, rabbit, minipig) following a single intravitreal injection that achieved vitreous concentrations of ocriplasmin 1.4 times higher than achieved with the recommended treatment dose. Administration of a second intravitreal dose in monkeys, 28 days apart, produced lens subluxation in 100% of the treated eyes [see Nonclinical Toxicology].

5.4 Retinal Breaks

In the controlled trials, the incidence of retinal detachment was 0.9% in the JETREA group and 1.6% in the vehicle group, while the incidence of retinal tear (without detachment) was 1.1% in the JETREA group and 2.7% in the vehicle group. Most of these events occurred during or after vitrectomy in both groups. The incidence of retinal detachment that occurred pre-vitrectomy was 0.4% in the JETREA group and none in the vehicle group, while the incidence of retinal tear (without detachment) that occurred pre-vitrectomy was none in the JETREA group and 0.5% in the vehicle group.

5.5 Dyschromatopsia

Dyschromatopsia (generally described as yellowish vision) was reported in 2% of all patients injected with JETREA. In approximately half of these dyschromatopsia cases there were also electroretinographic (ERG) changes reported (a- and b-wave amplitude decrease).

6 ADVERSE REACTIONS

The following adverse reactions are described below and elsewhere in the labeling:

- Decreased Vision [see Warnings and Precautions]
- Intravitreal Injection Procedure Associated Effects [see Warnings and Precautions and Dosage and Administration]
- Potential for Lens Subluxation [see Warnings and Precautions]
- Retinal Breaks [see Warnings and Precautions and Dosage and Administration]

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates in one clinical trial of a drug cannot be directly compared with rates in the clinical trials of the same or another drug and may not reflect the rates observed in practice.

Approximately 800 patients have been treated with an intravitreal injection of JETREA. Of these, 465 patients received an intravitreal injection of ocriplasmin 0.125 mg (187 patients received vehicle) in the 2 vehicle-controlled studies (Study 1 and Study 2).

The most common adverse reactions (incidence 5% - 20% listed in descending order of frequency) in the vehicle-controlled clinical studies were: vitreous floaters, conjunctival hemorrhage, eye pain, photopsia, blurred vision, macular hole, reduced visual acuity, visual impairment, and retinal edema.

Less common adverse reactions observed in the studies at a frequency of 2% - < 5% in patients treated with JETREA included macular edema, increased intraocular pressure, anterior chamber cell, photophobia, vitreous detachment, ocular discomfort, iritis, cataract, dry eye, metamorphopsia, conjunctival hyperemia, and retinal degeneration.

Dyschromatopsia was reported in 2% of patients injected with JETREA, with the majority of cases reported from two uncontrolled clinical studies. In approximately

half of these dyschromatopsia cases there were also electroretinographic (ERG) changes reported (a- and b-wave amplitude decrease).

6.2 Immunogenicity

As with all therapeutic proteins, there is potential for immunogenicity. Immunogenicity for this product has not been evaluated.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy: Teratogenic Effects

Pregnancy Category C. Animal reproduction studies have not been conducted with ocriplasmin. There are no adequate and well-controlled studies of ocriplasmin in pregnant women. It is not known whether ocriplasmin can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. The systemic exposure to ocriplasmin is expected to be low after intravitreal injection of a single 0.125 mg dose. Assuming 100% systemic absorption (and a plasma volume of 2700 mL), the estimated plasma concentration is 46 ng/mL. JETREA should be given to a pregnant woman only if clearly needed.

8.3 Nursing Mothers

It is not known whether ocriplasmin is excreted in human milk. Because many drugs are excreted in human milk, and because the potential for absorption and harm to infant growth and development exists, caution should be exercised when JETREA is administered to a nursing woman.

8.4 Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

8.5 Geriatric Use

In the clinical studies, 384 and 145 patients were ≥ 65 years and of these 192 and 73 patients were ≥ 75 years in the JETREA and vehicle groups respectively. No significant differences in efficacy or safety were seen with increasing age in these studies.

10 OVERDOSAGE

The clinical data on the effects of JETREA overdose are limited. One case of accidental overdose of 0.250 mg ocriplasmin (twice the recommended dose) was reported to be associated with inflammation and a decrease in visual acuity.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

No carcinogenicity, mutagenicity or reproductive and developmental toxicity studies were conducted with ocriplasmin.

13.2 Animal Toxicology and/or Pharmacology

The animal toxicity of ocriplasmin after a single intravitreal dose has been evaluated in rabbits, monkeys and minipigs. Ocriplasmin induced an inflammatory response and transient ERG changes in rabbits and monkeys, which tended to resolve over time. Lens subluxation was observed in the 3 species at ocriplasmin concentrations in the vitreous at or above 41 mcg/mL, a concentration 1.4-fold above the intended clinical concentration in the vitreous of 29 mcg/mL. Intraocular hemorrhage was observed in rabbits and monkeys.

A second intravitreal administration of ocriplasmin (28 days apart) in monkeys at doses of 75 mcg/eye (41 mcg/mL vitreous) or 125 mcg/eye (68 mcg/mL vitreous) was associated with lens subluxation in all ocriplasmin treated eyes. Sustained increases in IOP occurred in two animals with lens subluxation. Microscopic findings in the eye included vitreous liquefaction, degeneration/disruption of the hyaloideocapsular ligament (with loss of ciliary zonular fibers), lens degeneration, mononuclear cell infiltration of the vitreous, and vacuolation of the retinal inner nuclear cell layer. These doses are 1.4-fold and 2.3-fold the intended clinical concentration in the vitreous of 29 mcg/mL, respectively.

14 CLINICAL STUDIES

The efficacy and safety of JETREA was demonstrated in two multicenter, randomized, double masked, vehicle-controlled, 6 month studies in patients with symptomatic vitreomacular adhesion (VMA). A total of 652 patients (JETREA 464, vehicle 188) were randomized in these 2 studies. Randomization was 2:1 (JETREA:vehicle) in Study 1 and 3:1 in Study 2.

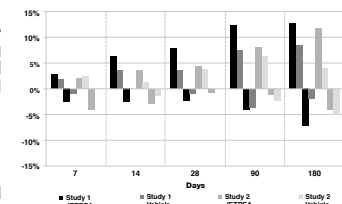
Patients were treated with a single injection of JETREA or vehicle. In both of the studies, the proportion of patients who achieved VMA resolution at Day 28 (i.e., achieved success on the primary endpoint) was significantly higher in the ocriplasmin group compared with the vehicle group through Month 6.

The number of patients with at least 3 lines increase in visual acuity was numerically higher in the ocriplasmin group compared to vehicle in both trials, however, the number of patients with at least 3 lines decrease in visual acuity was also higher in the ocriplasmin group in one of the studies (Table 1 and Figure 1).

Table 1: Categorical Change from Baseline in BCVA at Month 6, Irrespective of Vitrectomy (Study 1 and Study 2)

Study 1			
	JETREA	Vehicle	Difference
	N=219	N=107	(95% CI)
≥ 3 line Improvement in BCVA			
Month 6	28 (12.8%)	9 (8.4%)	44 (-25, 11.2)
> 3 line Worsening in BCVA			
Month 6	16 (7.3%)	2 (1.9%)	5.4 (1.1, 9.7)
Study 2			
	JETREA	Vehicle	Difference
	N=245	N=81	(95% CI)
≥ 3 line Improvement in BCVA			
Month 6	29 (11.8%)	3 (3.8%)	8.1 (2.3, 13.9)
> 3 line Worsening in BCVA			
Month 6	10 (4.1%)	4 (5.0%)	-0.9 (-6.3, 4.5)

Figure 1: Percentage of Patients with Gain or Loss of ≥ 3 Lines of BCVA at Protocol-Specified Visits



16 HOW SUPPLIED/STORAGE AND HANDLING

Each vial of JETREA contains 0.5 mg ocriplasmin in 0.2 mL citric-buffered solution (2.5 mg/mL). JETREA is supplied in a 2 mL glass vial with a latex free rubber stopper. Vials are for single use only.

Storage

Store frozen at or below -4°F (-20°C). Protect the vials from light by storing in the original package until time of use.

17 PATIENT COUNSELING INFORMATION

In the days following JETREA administration, patients are at risk of developing intraocular inflammation/infection. Advise patients to seek immediate care from an ophthalmologist if the eye becomes red, sensitive to light, painful, or develops a change in vision [see Warnings and Precautions].

Patients may experience temporary visual impairment after receiving an intravitreal injection of JETREA [see Warnings and Precautions]. Advise patients to not drive or operate heavy machinery until this visual impairment has resolved. If visual impairment persists or decreases further, advise patients to seek care from an ophthalmologist.

Manufactured for: ThromboGenics, Inc. 101 Wood Avenue South, 6th Floor Iselin, NJ 08830

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Initial U.S. Approval: 2012 ThromboGenics U.S. patents: 7,445,775; 7,547,435; 7,914,783 and other pending patents.

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How to Use the Program Summary

The *Program Summary* provides a summary of the ARVO 2014 Annual Meeting Scientific Program and information about other Meeting events and activities. Abstracts are not included. Abstracts are available online for viewing and printing. See below for details.

The scientific program is organized chronologically by day, session time and program number. All sessions scheduled within the same time slot are listed together (see thumb index at the side of each page).

A Program Schedule-at-a-Glance is included for each day to provide a quick view of the scheduled paper and poster sessions, symposia, award lectures, business meetings, workshops and special interest groups (SIGs). These program schedules are located at the beginning of each scientific program day.

Page headers include the day, type of session and the program number range on each page.

Indices

There are four indices to assist you in locating sessions, moderators and presentations.

- **Author Index** — All authors are listed alphabetically by last name. Boldface type is used to indicate the program number and poster board number of the abstract for which the author is First (Presenting) Author. Bold and italic type indicates a symposium presentation. This index is located in the back of this book.
- **Moderator Index** — This is a listing of the session moderators alphabetically by last name. Included are the moderator's name, session day, date, time, location, title and Commercial Relationships Disclosure, if applicable. This index is located in the back of this book.
- **Clinical Trial Registration Index** (online only) — This is a listing by program number of the clinical trial registration information for each applicable presentation as indicated at the time of abstract submission. See ARVO Statement on Registering Clinical Trials in the Index. This index can be found online at arvo.org/2013/ProgramSummary/Index.
- **Commercial Relationships Index** (online only) — This is a listing by program number of the commercial relationships and names of firms with which commercial relationships exist for

each First Author and Co-author as indicated. First Authors or Co-authors who indicated "none" for commercial relationship are not included in this index. See Commercial Relationships Policy in the Index. This index can be found online at arvo.org/amindices.

Paper Sessions/Symposia/Minisymposia:

Diagram illustrating the layout of a Paper Session/Symposia/Minisymposia entry:

- Session location: S 320AB
- Session day, date and time: Wednesday, May 07, 2014 8:30 AM-10:15 AM
- Organizing section: Physiology/Pharmacology / Glaucoma / Retina
- Contributing section (s): Glaucoma / Retina
- Session number: 406
- Session title: *Changes in Cell Volume Effecting IOP — Minisymposium*
- Program number: 4039
- Paper presentation time: 8:30
- Paper title: Role of aquaporins in cell volume regulation.
- Author: Raj Patil. iVeena LLC, Sandy, UT

Poster Sessions:

Diagram illustrating the layout of a Poster Session entry:

- Session location: Exhibit/Poster Hall SA A0114-A0151
- Poster board number range for session: A0114-A0151
- Session day, date and time: Wednesday, May 07, 2014 8:30 AM-10:15 AM
- Organizing section: Visual Psychophysics / Physiological Optics / Retina
- Contributing section (s): Physiological Optics / Retina
- Session number: 414
- Session title: *Low vision I*
- Program number: 4128
- Poster board number for presentation: A0116
- Poster title: Multiplexing Prism: A novel optical element for visual field expansion. Eli Peli. 1Ophthalmology, Schepens Eye Research Institute, Boston, MA; 2Ophthalmology, MEE, Harvard Medical School, Boston, MA *CR

*CR refers to the program number in the Commercial Relationships (CR) Index for Disclosures.

x² refers to the program number in the Clinical Trial Registration (CT) Index.

Poster board numbers indicate the Exhibit Hall location of the presentation. For example, A34 will be located in Poster Area A and C1098 will be located in Poster Area C.

Program information, printing abstracts and other features

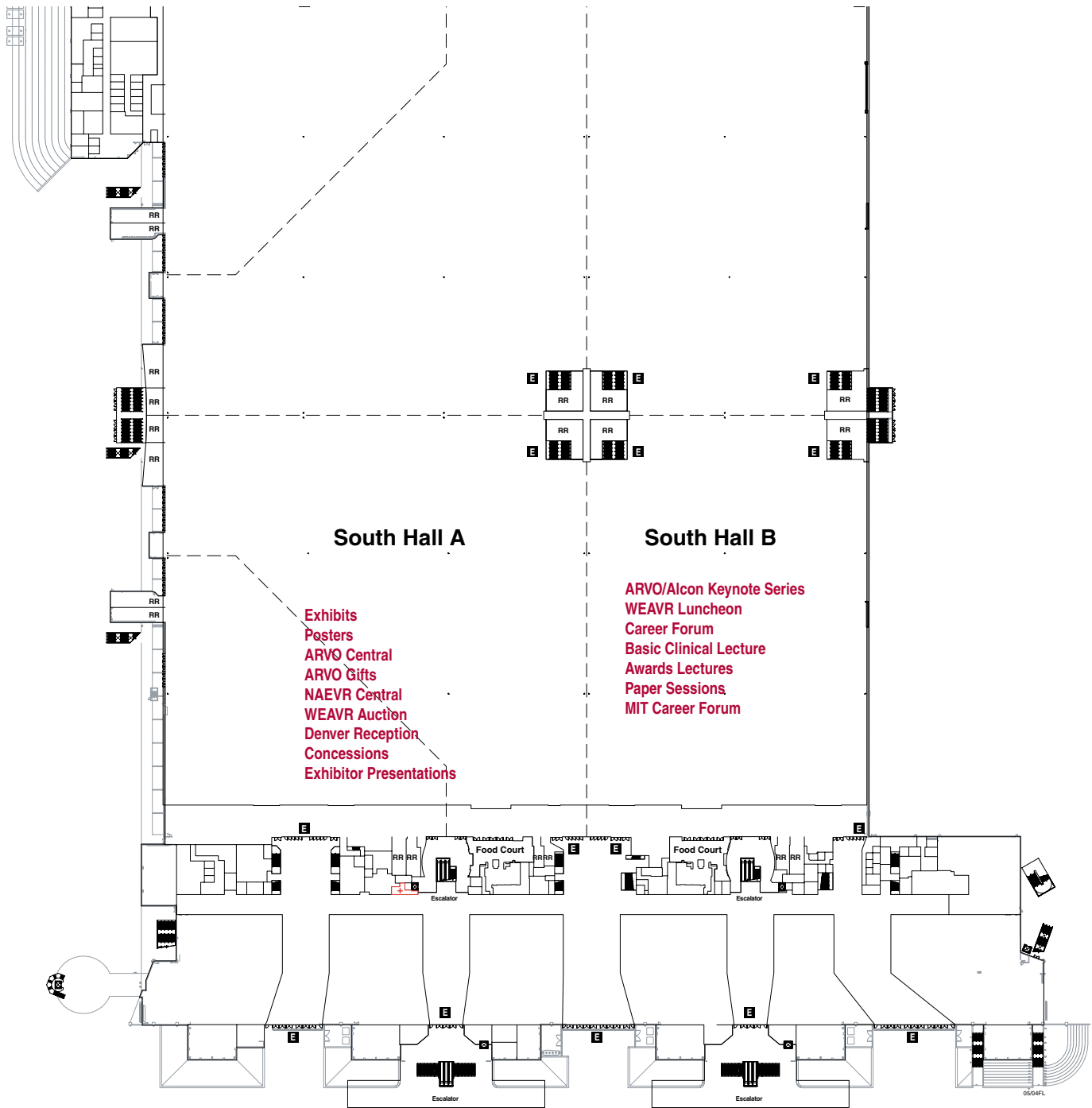
For searchable information about the scientific program, authors, printable abstracts by session and to develop your own personal Meeting itinerary, visit arvo.org/Annual_Meeting/Program.

Abstracts also will be available at iavs.org, the version of record, in May 2014. For ARVO abstracts from 2002 forward, the following citation format should be used:

Roska BM, et al. Invest Ophthalmol Vis Sci. 2002;43:ARVO 989.

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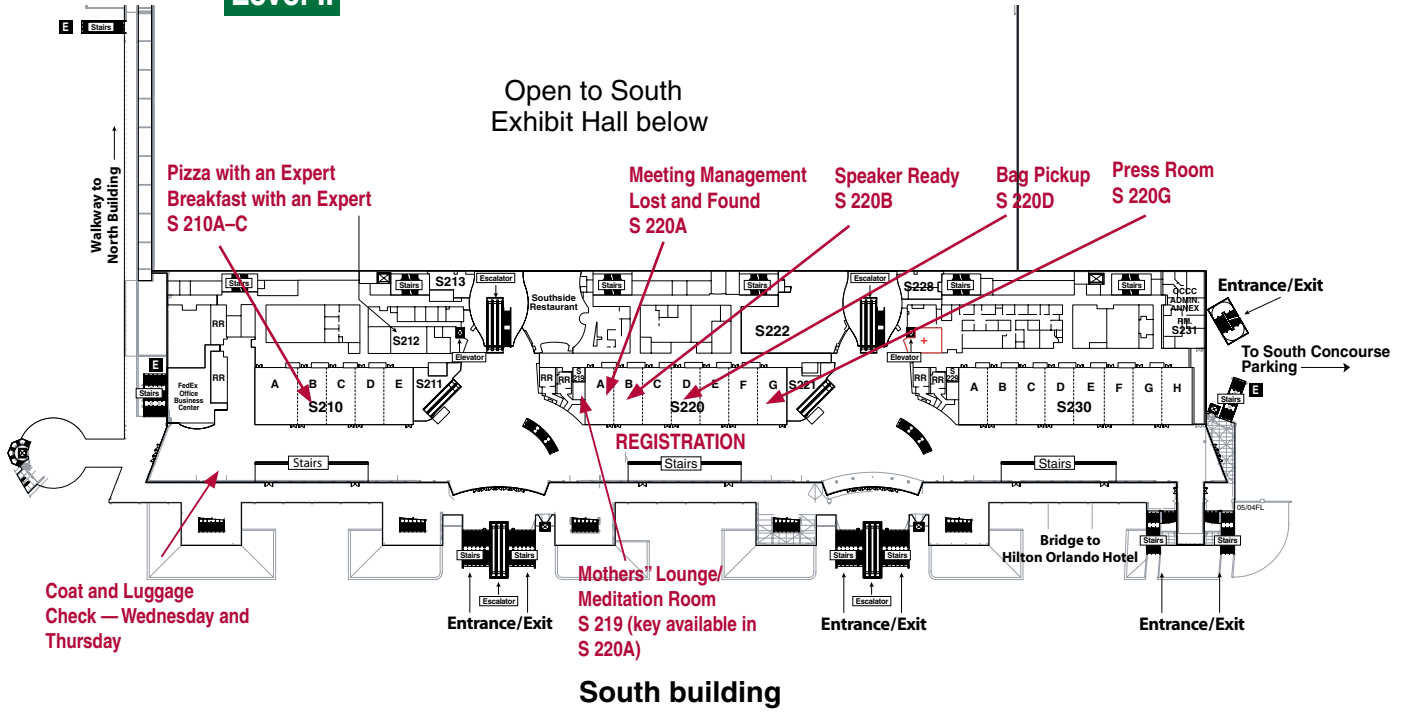
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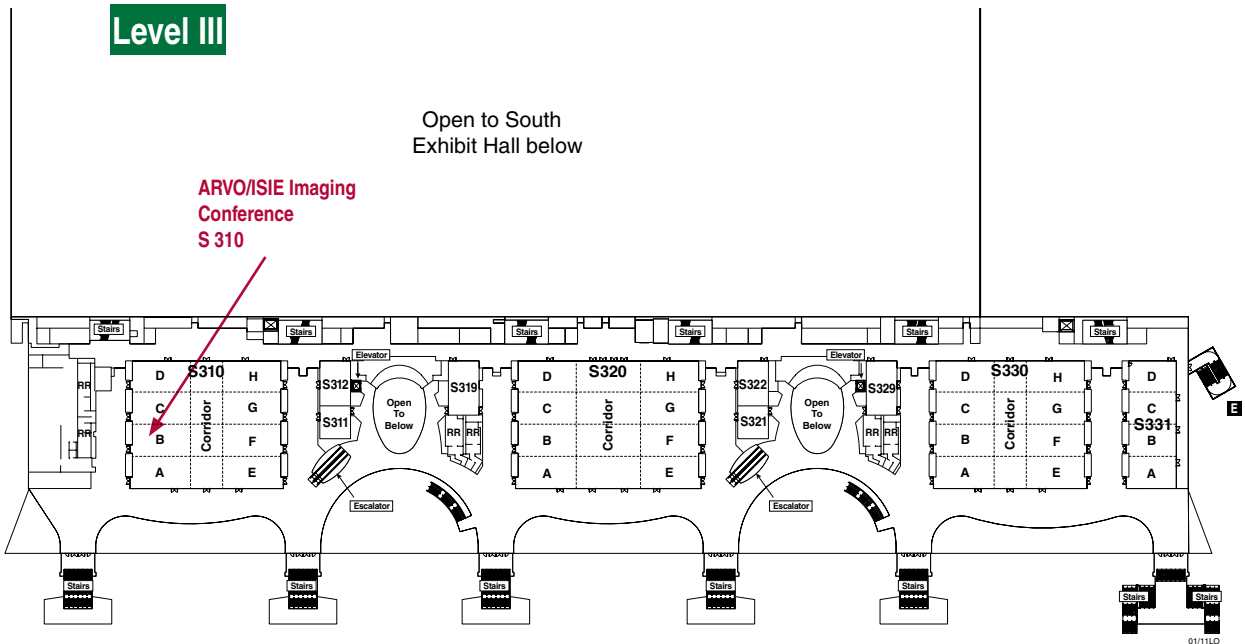
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Level II



Level III



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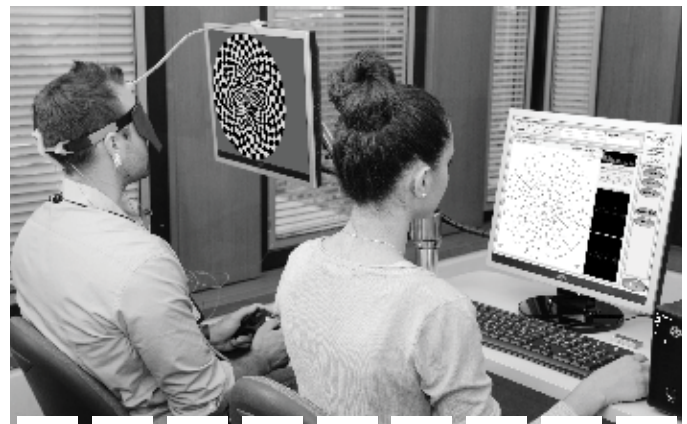
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sunglasses
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When: Tuesday, May 6

Where: Level 1, South Exhibit Hall A

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ARVO/Alcon Keynote Series*



Barry Marshall, AC, DSc, FRACP, FRS, FAA
2005 Nobel Laureate, Physiology or Medicine
University of Western Australia
How curiosity-driven research can lead to the Nobel Prize

Session #117, Sunday, May 4, 12noon – 1:15pm
Level 1/South Hall B



Jean Bennett, MD, PhD, FARVO
University of Pennsylvania School of Medicine
Seeing the Light with Retinal Gene Therapy: Things You Wished You'd Known Early on Your Way to Late-Stage Trials

Session #551, Thursday, May 8, 2 – 3:15pm
Level 1/South Hall B

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ARVO will induct the Fellows Class of 2014 at the opening ARVO/Alcon Keynote Session, to recognize and honor these members for their leadership, dedication and contributions to the Association.

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Distinguished Service Award recipients will be recognized at the General Business Meeting (Session #323, Tuesday, May 6 10:15 – 10:55am, S 230GH).



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Martine J. Jager, MD, PhD, FARVO

This 2014 award is presented to Martine J. Jager, MD, PhD, FARVO, of Leiden University Medical Center in the Netherlands. Among her outstanding contributions, Jager served as ARVO president (2007 – 2008), Trustee, chair of the Annual Meeting Program Committee, chair of the Advocacy Committee, chair of the International Chapter Affiliate Council and co-chair of the Long Range Planning Committee.

In addition, she has served on numerous other committees and as an IOVS Editorial Board Member. Jager continues to be active in the ARVO Foundation WEAVR Leadership Committee, a member of the Dowling Society and has established an ARVO travel grant in honor of her father.

The Joanne G. Angle Award will be presented to Jager at the General Business Meeting (Session #323, Tuesday, May 6, 10:15 – 10:55am, Room S 230GH).

The ARVO/Alcon Keynote Series is sponsored by the ARVO Foundation through a generous grant from Alcon Laboratories.



Proctor Award and Lecture



Wolfgang Baehr,
PhD, FARVO

Session #289
Monday, May 5, 5:45 – 6:30pm
Level 1, South Hall B

Wolfgang Baehr, PhD, FARVO
University of Utah School of Medicine
Membrane Protein Transport in Photoreceptors

Cogan Award and Lecture



Kirill Martemyanov,
PhD

Session #482
Wednesday, May 7, 5:45 – 6:30pm
Level 1, South Hall B

Kirill Martemyanov, PhD
The Scripps Research Institute
G protein signaling in the retina and beyond

Mildred Weisenfeld Award and Lecture



José Cunha-Vaz,
MD, PhD

Session #290
Monday, May 5, 6:45 – 7:30pm
Level 1, South Hall B

José Cunha-Vaz, MD, PhD
AIBILI, University of Coimbra, Portugal
Phenotypes and biomarkers of diabetic retinopathy

Friedenwald Award and Lecture



Krzysztof
Palczewski, PhD

Session #483
Wednesday, May 7, 6:45 – 7:30pm
Level 1, South Hall B

Krzysztof Palczewski, PhD
The Scripps Research Institute
Structural biology of the fundamental steps in vision

2015 Bressler Award in Vision Science

CALL FOR NOMINATIONS

Open to established mid-career clinicians and scientists whose contributions have advanced vision care and vision science and whose further work is expected to contribute substantially to the preservation of sight. Clinically and/or scientifically accomplished, yet under recognized in his/her respective fields.

Nominations must be made online. Please go to lighthouseguild.org/bressler. Closing date for nominations and receipt of all supporting documents is **December 31st, 2014**.

The prize of \$50,000 will be awarded at the Alfred W. Bressler Vision Science Symposium to be held in New York City in the fall of 2015.

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Nominations must be made online. Please go to lighthouseguild.org/pisart. Closing date for nominations and receipt of all supporting documents is **December 31st, 2014**.

The prize of \$30,000 will be awarded at a lecture to be held in Florida in the winter of 2015.

For additional information call **212-769-7801** or e-mail pisart@lighthouseguild.org



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University of the
Witwatersrand
Johannesburg, South
Africa

Grazielly Oliveira
Sorocaba Eye Bank -
Sorocaba Ophthalmology
Hospital
Sorocaba, São Paulo,
Brazil

Daniela Alejandra
Quinteros
Department of Pharmacy
at the Chemistry Faculty
of the National University
of Cordoba
Cordoba, Argentina

Sahebaan Sabharwal
Sri Ramachandra
University
Chennai, India

Bibhuti B. Saikia
Aravind Medical Research
Foundation
Madurai, India

Mongkol Tadarati
Rajavithi Hospital
Bangkok, Thailand

ARVO Foundation/ Genentech Age- related Macular Degeneration Fellowship

Matthew Campbell
Trinity College Dublin
Dublin, Ireland

Crstian J. Ildefonso
University of Florida
College of Medicine
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ARVO Foundation/ Ludwig von Sallmann Clinician-Scientist Award

Balamurali K. Ambati
John Moran Eye Center
Salt Lake City, UT

ARVO Foundation/ Pfizer Ophthalmics/ Carl Camras Translational Research Awards

Rajendra Apte
Washington University
School of Medicine
St. Louis, MO

Farhad Hafezi
Geneva University
Hospitals and USC
Geneva, Switzerland

Hendrik P. N. Scholl
Johns Hopkins University
School of Medicine
Baltimore, MD

ARVO Foundation/ Oberdorfer Award in Low Vision

David B. Rein
NORC at the University of
Chicago
Chicago, IL

Society for Advancement of Chicanos and Native Americans in Science (SACNAS)

Daniel Foster
University of California, Los
Angeles
Los Angeles, CA

ARVO Vision Research Minority Fellowships

Dianne Barrett
Columbia University
College
New York, NY

Alexandros Pappas
Nova Southeastern
University College
Davie, FL

ARVO Foundation/ Dr. Roger Vogel Award for Pharmaceutical Research

Naj Sharif
Alcon Research Ltd
Fort Worth, TX

ARVO Foundation/ Pfizer Collaborative Research Fellowship

Soumyava Basu
LV Prasad Eye Institute
Hyderabad India

Shi-Jun Weng
Fudan University
Shanghai, China

ARVO Foundation/ Merck Collaborative Research Fellowship

Paula Schaiquevich
Unit of Clin
Pharmacokinetics
Buenos Aires, Argentina

Geeta K Vemuganti
University of Hyderabad
Hyderabad, India

Travel Grants

ARVO, the ARVO
Foundation and our partners
offer travel grants annually
to assist young investigators
in presenting their research
at the ARVO Annual
Meeting. Congratulations
to the following members
who have been selected to
receive 2014 Travel Grant
Awards. The Program
number follows the
recipient's name.

American Uveitis Society

Abhishek R. Payal
University of Pennsylvania
Cambridge, MA
#2515

ARVO International

Waleed Alghamdi
Brien Holden Vision Institute
Kingsford, NSW Australia
#6065

Celso Henrique Freitas Alves
Netherlands Institute for
Neurosciences
Amsterdam, Netherlands
#1638

Ryoichi Arita
Kyushu University
Fukuoka, Japan
#1261

Sourabh Arora
University of Alberta
Edmonton, AB Canada
#6100

Gerold Aschinger
Medical University of
Vienna
Wien, Austria
#4327

Sadaf Ashraf
Queens University Belfast
Belfast, UK
#3019

Jeong Hun Bae
Kangbuk Samsung Hospital,
Sungkyunkwan University
School of Medicine
Seoul, Korea
#448

Robert John Barry
University of Birmingham
Birmingham, UK
#6420

Gemma Beers
University of Bristol
Bristol, UK
#2500

Trishal Boodhna
City University, London
London, UK
#3012

Sara Brittingham
Inselspital, University
Hospital of Bern
Bern, Switzerland
#4222

Susan R. Bryan
Rotterdam Ophthalmic
Institute
Rotterdam, Netherlands
#3007

Gabriëlle HS Buitendijk
Erasmus Medical Center
Rotterdam, Netherlands
#1276

Yu Man Chan
University of Melbourne
Parkville, VIC Australia
#3005

Seen Nee Chia
Tennent Institute of
Ophthalmology, Gartnavel
General Hospital
Glasgow, UK
#2567

Colin J. Chu
UCL Institute of
Ophthalmology
London, UK
#5290

Andrea Coronado
Western University, Ivey
Eye Group
London, ON Canada
#5330

Alberto Cuccu
University of Cagliari
Cagliari, Italy
#4100

Rui Cui
Beijing Institute of
Ophthalmology
Beijing, China
#499

Christiana Dinah
Royal Victoria Infirmary
Newcastle, UK
#2204

Ali Dirani
Saint-Joseph University,
Faculty of Medecine
Beirut, Lebanon
#4395

Veronika Doblhoff-Dier
Medical University of Vienna
Vienna, Austria
#4320

Debarun Dutta
University of New South
Wales
Sydney, NSW Australia
#4647

Rachel Exler
University of Toronto
Newmarket, ON Canada
#2268

Sonia Ferreira
University of Coimbra
Coimbra, Portugal
#2171

Robert Patrick Finger
Centre for Eye Research
Australia
Melbourne, VIC Australia
#3957

Ida Grunnan Fostad
University of Oslo
Oslo, Norway
#1995

Rafael L. Furlanetto
Federal University of
São Paulo
Uberlandia, MG Brazil
#4738

Marcela Garita
CABIMER
Sevilla, Spain
#3988

Apostolos Georgiannakis
UCL Institute of
Ophthalmology
London, UK
#5993

Fiona C. Glen
City University London
London, UK
#3009

Martin Gliem
University of Bonn
Bonn, Germany
#3527

Weifeng Gong
Zhongshan Ophthalmic
Center
Guangzhou, China
#5342

Lucia Gonzalez-Buendia
University of Valladolid
Pozuelo de Alarcón
Madrid, Spain
#1089

Xinxing Guo
Zhongshan Ophthalmic
Center
Guangzhou, China
#431

Ulrike Hampel
Institute of Anatomy II
Erlangen, Germany
#1302

Guoqing Han
Hanson Institute
Adelaide, SA Australia
#6318

Rossen Hazarbasanov
Paulista School of
Medicine, São Paulo/
Hospital, Federal
University of São Paulo
São Paulo, Brazil
#3684

See Travel Grants,
page 16



ALCON RESEARCH INSTITUTE 2013 AWARDEES



Tin Aung, Mmed, FRCS,
FRCOphth, PhD



Janey Wiggs, MD, PhD



Francois Delori, PhD



Russell Van Gelder, MD, PhD



Theodore G. Wensel, PhD



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Awards, Fellowships, Travel Grants and Chapter Affiliates

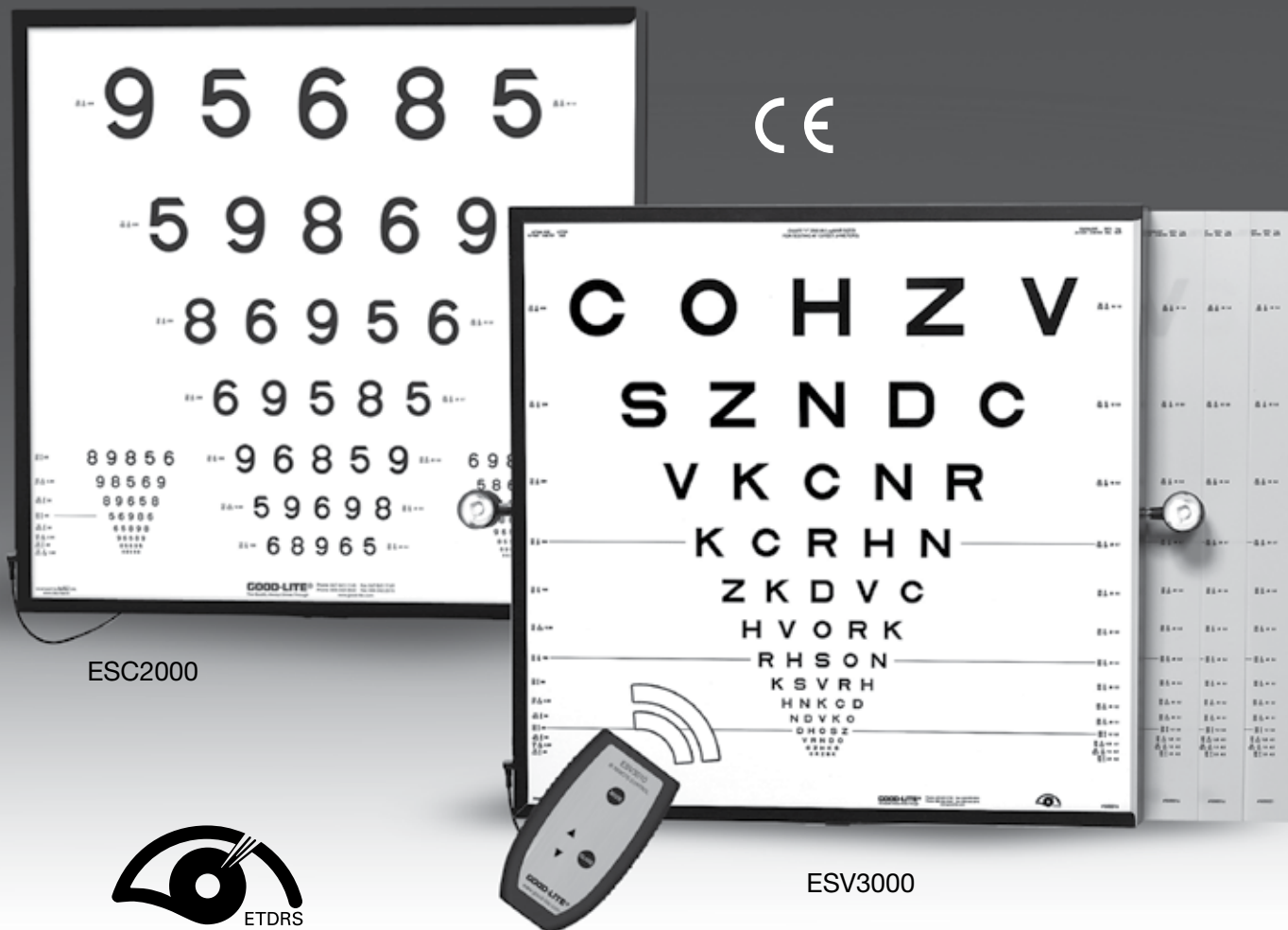
Travel Grants, *continued* from page 14

Philipp Herrmann UCL, Institute of Ophthalmology London, UK #6329	Jongshin Kim KAIST Daejeon, Korea #355	Amirah Mohd Zaki UCL Institute of Ophthalmology London, UK #2484	Pathma Ramasamy Dublin City University Dublin, Ireland #1287	Julia Teister University Medical Center, Mainz Mainz, Germany #1663	Jingjing Zang University of Zurich Zurich, Switzerland #5005
Atsushi Hirayama Yamagata University Graduate School of Medicine Yamagata, Japan #676	Carolina Kunnen Vision CRC Sydney, NSW Australia #1976	Umaima Mulla Tennent Institute of Ophthalmology Glasgow, UK #537	Jacqueline Reinhard Ruhr-University Bochum Bochum, Germany #2419	Michel Teussink Radboud University Medical Centre Nijmegen, Netherlands #2621	Ying Zhu Eye and ENT Hospital of Fudan University Shanghai, China #1140
Ying Hon The Hong Kong Polytechnic University Hong Kong #3707	Fatima Kyari London School of Hygiene and Topical Medicine London, UK #4299	Takahito Nakama Kyushu University Fukuoka, Fukuoka Japan #4945	Katja Reinhard University of Tübingen Tübingen, Germany #2380	Alexander Viktor Tschulakow Institute for Ophthalmic Research Tuebingen, Germany #3074	European Journal of Ophthalmology Manuela Bossi UCL Institute of Ophthalmology London, UK #5981
Yoshikatsu Hosoda Kyoto University Graduate School of Medicine Kyoto, Japan #1132	Yong Eun Lee Seoul St. Mary's hospital Eye Institute (SSEI) Seoul, Korea, Republic of #1993	Daniel Narayan University of Adelaide Adelaide, SA Australia #1667	Philipp Ken Roberts Medical University of Vienna Vienna, Austria #1238	Jelle Vehof St. Thomas' Hospital, King's College London Groningen, the Netherlands #3054	Gesine Mohn Vijay Patel University of Leicester Leicester, UK #2658
Akihiro Ishibazawa Asahikawa Medical University Asahikawa, Hokkaido Japan #3417	Yimin Li Eye & ENT Hospital, Fudan University Shanghai, China #3646	Marion Neuillé Institut de la Vision Paris Paris, France #1642	Athira Rohit Brien Holden Vision Institute Sydney, NSW Australia #1304	Martin Vietauer Medical University of Vienna Vienna, Austria #4326	Informa Healthcare Albert H. Alhatem Hamilton Eye Institute, University of Tennessee HSC Memphis, TN #1173
Yifan Jian Simon Fraser University Burnaby, BC Canada #2083	Jeremiah Kah Heng Lim The University of Melbourne Melbourne, VIC Australia #4554	Barbara Neuser University of Cologne Cologne, Germany #4590	Fabio Felipe Santos Federal University of São Paulo São Paulo, SP Brazil #5284	Xia Wang University of British Columbia Vancouver, BC Canada #2359	Helena Lee University of Leicester Leicester, UK #691
Gudmundur Jonsson University of Iceland Reykjavik, Iceland #1888	Deborah Lipski IRIBHM Brussels, Belgium #5306	Terese Olsen Buskerud and Vestfold University College Trondheim, Norway #765	Christina Schwarz Universidad de Murcia Murcia, Spain #5971	Wijeyanthy Wijeyakumar Sydney Institute of Vision Science Sydney, NSW Australia #3945	National Eye Institute Ashkan Abbey William Beaumont Hospital Royal Oak, MI #5927
Georgia Kaidonis Flinders University Adelaide, SA Australia #2237	Iain Livingstone NHS GG&C Falkirk, UK #1612	Natalie Pankova University of Toronto Toronto, ON Canada #2097	Corey A. Smith Dalhousie University Halifax, NS Canada #2176	Gah-Jone Won University of Waterloo Waterloo, ON Canada #750	Smriti Akshaya Agrawal University of Delaware Newark, DE #745
Pearse Andrew Keane Moorfields Eye Hospital NHS Foundation Trust London, UK #3066	Ryan Man Ctr for Eye Research Australia East Melbourne, VIC Australia #5355	Alessandro Papayannis U.L.S.S. 7 Veneto Orientale Conegliano, Italy #2345	Hyun Beom Song Clinical Research Institute, Seoul National University Hospital Seoul, Korea #5409	Weiju Wu Durham University Durham, UK #737	Victoria Addis Georgetown University/ Washington Hospital Center Washington, DC #5715
Nihal Kenawy University of Liverpool Liverpool, UK #1283	Vinod Maseedupally University of New South Wales Sydney, NSW Australia #1536	Arshan Perera LMU Munich Munich, Germany #5000	Jaime Javier Soria Viteri Hospital Dr. Elias Santana Santo Domingo, Dominican Republic #4397	Hongfei Ye Eye and ENT hospital Shanghai, China #5041	Oleg Alekseev Drexel University College of Medicine Philadelphia, PA #1691
Samer Khateb Hadassah-Hebrew University Medical Center Jerusalem, Israel #1712	Simin Masoudi University of New South Wales Sydney, NSW Australia #35	Vincent Pernet Brain Research Institute, ETH University Zurich Zurich, Switzerland #2967	Laura Soriano-Romaní IOBA University of Valladolid Valladolid, Spain #498	Tun Kuan Yeo Tan Tock Seng Hospital Singapore #637	Amani Al-Tarouti University of Michigan Kellogg Eye Center Ann Arbor, MI #4832
Christine A. Kiire Oxford Eye Hospital Oxford, UK #4408	Sarim Mohammad University of Leicester Leicester, UK #5100	Sonja Gudrun Prager Medical University Vienna Vienna, Austria #1761	Houda Tahiri Université de Montréal/ Ste Justine Hospital Research Center Montreal, QC Canada #4942	Nisha Shirish Yeotikar Brien Holden Vision Institute Kensington, Sydney, NSW Australia #21	

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page 18

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Travel Grants, *continued* from page 16

Sejal Amin
Mayo Clinic
Rochester, MN
#2051

Lydia Ann
Jules Stein Eye Institute
University of California,
Irvine, CA
#1007

Bogale Aredo
University of Texas
Southwestern Medical
Center
Dallas, TX
#613

Pachiappan Arjunan
Georgia Regents University
Augusta, GA
#6337

Allison Bardes
West Virginia University
Morgantown, WV
#1673

Carrie Ellen Barnum
University of Delaware
Wilmington, DE
#1681

Brandi S. Betts-Obregon
University of Texas at
San Antonio
San Antonio, TX
#3472

Christopher J. Brady
Jefferson University
School of Medicine
Philadelphia, PA
#4826

Leah J. Campbell
University of
Massachusetts, Amherst
Amherst, MA
#2968

Daniel L. Chao
Bascom Palmer Eye Institute,
University of Miami
Coral Gables, FL
#1286

Monica Chen
Columbia University
New York, NY
#4778

Yicheng Chen
Albert Einstein/Montefiore
Bronx, NY
#2054

Jae Hyek Choi
U.S. Army Institute of
Surgical Research
San Antonio, TX
#6228

Daniel Robert Coates
University of California,
Berkeley
Berkeley, CA
#3533

Jessica Cooke Bailey
Case Western
Reserve University
Nashville, TN
#4569

Ashley S. Davis
University of Miami
Miami, FL
#5758

Adam P. DeLuca
University of Iowa
Iowa City, IA
#3262

Amardeep Dhaliwal
UPMC Eye Center/
University of Pittsburgh
School of Medicine
Pittsburgh, PA
#5984

Allen Eghrari
Johns Hopkins University
School of Medicine
Baltimore, MD
#3586

Alyssa C. Ehrlich
Columbia University
New York, NY
#5644

Eerik Elias
University of Utah
Salt Lake City, UT
#3517

Medi Eslani
University of Illinois
at Chicago
Chicago, IL
#4711

Stephanie M. Evans
Vanderbilt Eye Institute
Nashville, TN
#5873

Henry L. Feng
Robert Wood Johnson
Medical School
Piscataway, NJ
#308

Jasmine H. Francis
Memorial Sloan-Kettering
Cancer Center
New York, NY
#3091

Aakriti Garg
Columbia University
College of Physicians
and Surgeons
New York, NY
#6311

Aubrey Gilbert
Harvard Medical School/
Massachusetts Eye &
Ear Infirmary
Boston, MA
#4495

Gina L. Griffith
University of Oklahoma
Health Sciences Center
Oklahoma City, OK
#4698

Yonju Ha
University of Texas
Medical Branch
Galveston, TX
#2178

ARVO social events: Everyone is welcome!

Sunday Social at Universal Studios Florida®

Sunday, May 4, 7:30 – 10:30pm

Join your colleagues for food, drinks and fun at the New York City Street set at Universal Studios. Music is provided by Dr. John and ARVO Rocks! on the Universal Music Plaza Stage. ARVO attendees will have exclusive access to major attractions, including Twister...Ride it Out®, Transformers: The Ride – 3D, Despicable Me Minion Mayhem, Revenge of the Mummy® and Hollywood Rip Ride Rockit®.

Student/Trainee Social

Monday, May 5, 7:30 – 9pm
Hilton Orlando, Fountain Plaza
(6001 Destination Pkwy)

Don't miss this reception to honor students, members-in-training, and travel and research grant awardees. Find old

friends, make new ones and meet some of ARVO's future leaders. Everyone is welcome.

ARVO Classical Concert

Wednesday, May 7, 8 – 10pm
Plaza International Ballroom
Hyatt Regency Orlando (formerly Peabody)
(9801 International Drive)

The popular ARVO Classical Concert is performed by multi-talented ARVO members at the beautiful Hyatt Regency Orlando. Relax and enjoy the music.



ARVO Karaoke

Wednesday, May 7,
9pm – 12midnight
ICEBAR Orlando
(8967 International Drive)

ARVO Karaoke is the chance to showcase your vocal talents or cheer on your favorite performer. The IceBar Orlando, featured as one of the top 10 "Extreme Barhopping" bars on Travel Channel, is kept at a frosty 27 degrees with 50 tons of ice carved into a winter wonderland with lights, music and the feel of the Antarctic. After your cool trek to the bar, warm up in the Fire Lounge with ARVO karaoke! Cash bar, light snacks and prizes. You must be 21 years or older to attend this event.

Awards, Fellowships, Travel Grants and Chapter Affiliates

Zeina Haddad
University of Virginia
Charlottesville, VA
#2287

Andrew Oh Jo
University of Utah
South Jordan, UT
#3021

Alexander V. Kolesnikov
Washington University in
St Louis
St Louis, MO
#3034

Ang Li
Case Western Reserve
University
Cleveland, OH
#158

Stephanie Ma
Wayne State University
School of Medicine
Troy, MI
#5566

Brandie Morgan
University of Missouri
Columbia, MO
#1451

Naama Hammel
University of California,
San Diego
La Jolla, CA
#4768

Adiv A. Johnson
University of Arizona
Rochester, MN
#2971

Lingyun Kong
Baylor College of Medicine
Pearland, TX
#5926

Bingjie Ling
University of Virginia
Charlottesville, VA
#3195

Brandon Richard Macias
University of California,
San Diego
San Diego, CA
#2164

Sarah Mrejen
Vitreous Retina Macula
Consultants of New York
New York, NY
#3970

Amirhossein Hariri
Doheny Eye Institute
Los Angeles, CA
#5885

Talia Rosenberg Kaden
Memorial Sloan Kettering
Cancer Center
New York, NY
#6017

David Kuo
University of California,
San Diego
Piedmont, CA
#872

Yun Ling
University of Pittsburgh
School of Medicine
Pittsburgh, PA
#4304

Pankaj Malhotra
University of Illinois College
of Medicine, Peoria
Orland Park, IL
#5900

Amanda Mui
Emory University
Atlanta, GA
#6189

R. Glenn Hepfer
Clemson University
Charleston, SC
#2989

Patrick William Keeley
University of California,
Santa Barbara
Santa Barbara, CA
#718

Alan Le
University of California,
Los Angeles
Los Angeles, CA
#2559

Yao Liu
Harvard Medical School
Madison, WI
#5333

Jonathan Paul Martin
University of Pennsylvania
Philadelphia, PA
#1655

Aaron Nagiel
University of California,
Los Angeles
Los Angeles, CA
#3938

Sarah M. Hilkert
Havener Eye Institute,
Ohio State University
Columbus, OH
#5580

Brenton Keller
Duke University
Durham, NC
#1631

Patrick J. Lee
DGSOM University of
California, Los Angeles
Newport Coast, CA
#4087

Maria J. Lopez
Schepens Eye Institute,
Harvard Medical School
Foxboro, MA
#5044

Amir Marvasti
University of California,
San Diego
Boston, MA
#3551

Afshan Nanji
Bascom Palmer Eye Institute
Miami, FL
#2448

Kathleen Josephine Jee
Wilmer Eye Institute,
Johns Hopkins University
School of Medicine
Baltimore, MD
#5820

Mercy Kibe
University of Tennessee
Health Science Center
Memphis, TN
#6442

John Edward Legarreta
UPMC Eye Center/
University of Pittsburgh
Pittsburgh, PA
#4876

Esteban Luna
University of Pennsylvania
Philadelphia, PA
#5772

Elizabeth P. Moran
University of Oklahoma
Health Sciences Center
Oklahoma City, OK
#1052

Divya Narendra
University of Pittsburgh
Medical Center Eye Center
Pittsburgh, PA
#2648

See **Travel Grants**,
page 20

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October 24 - 25, 2014 • Boston, MA

This **Third International Biennial Symposium on AMD** will bring together international experts from a diverse array of topics as well as leaders from related disciplines outside ophthalmology in an interactive format to discuss current and future topics in AMD research. Subjects that will be covered include RPE transplantation, retina & choroid vasculature, inflammation, new concepts in pathology, functional implications of genetic risk factors, RPE biology, imaging, animal models.

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www.schepens.harvard.edu/amd2014



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Travel Grants, *continued* from page 19

Hossein Nazari Khanamiri
University of Southern
California
Los Angeles, CA
#3979

Brooke Nesmith
University of Louisville
Louisville, KY
#591

Joshua Nunn
University of Virginia
Charlottesville, VA
#6140

Christian R. Osswald
Illinois Institute of
Technology
Chicago, IL
#464

Jennifer Park
Albert Einstein College of
Medicine
Bronx, NY
#6090

Mallika Pathania
University of Delaware
Newark, DE
#3042

Anthony Puntel
Case Western Reserve
University
South Euclid, OH
#6000

Vishal Rao
University of North
Carolina at Chapel Hill
Chapel Hill, NC
#679

Derek James Royer
University of Oklahoma
Health Sciences Center
Oklahoma City, OK
#1692

Zaid Safiullah
Department of Radiology,
University of Pittsburgh
Pittsburgh, PA
#4771

James Sampson
Tufts University
Boston, MA
#4601

Abdoulaye Sene
Washington University in
St. Louis
St. Louis, MO
#84

Sumit Sharma
Duke University
Durham, NC
#1311

Fadi Salim Shaya
Macula & Retina Institute
Glendale, CA
#3863

Anna Silverman
University of California,
San Diego
La Jolla, CA
#4773

Helen Song
Schepens Eye Research
Institute
Boston, MA
#3576

Allison E. Songstad
University of Iowa
Coralville, IA
#3451

Raafay Sophie
Wilmer Eye Institute/
Johns Hopkins University
Baltimore, MD
#1702

Maxwell Stem
University of Michigan,
Kellogg Eye Center
Ann Arbor, MI
#4426

Vivian M Sueiras
University of Miami
Coral Gables, FL
#730

Preethi Thiagarajan
Retina Foundation of the
Southwest
New York, NY
#2662

Levi Todd
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Columbus, OH
#830

Priscilla Hiu-Mei Too
Cleveland Clinic/
Lerner Research Institute
Berkeley, CA
#853

Eleanor Trousdale
Mayo Clinic
Rochester, MN
#2703

Aaron Wang
Wilmer Eye Institute,
Johns Hopkins University
Baltimore, MD
#1606

Yvonne Wang
Weill Cornell Medical College
New York, NY
#4709

Andrea Wenzel
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#3069

Thomas H. Wu
University of California,
Berkeley
Berkeley, CA
#751

Minzhong Yu
Cleveland Clinic
Foundation
Cleveland, OH
#366

Mingjuan Lisa Zhang
Johns Hopkins University
School of Medicine
Baltimore, MD
#2166

Zhijing Zhang
University of Texas Health
Medical School
Houston, TX
#5004

Sek-Jin Chew

Baskar Arumugam
University of Houston
Houston, TX
#3603

Societa Italiana Laser in Oftalmologia

Eleonora Benatti
University of Milan
Monza, Italy
#277

Simona Maria Caprani
University of Insubria
Varese, Italy
#3831

Laura Dell'Arti
University of Milan
Brugherio, MB Italy
#3613

Elena Garoli
University of Milan
Milan, Italy
#1488

ARVO Foundation/ C. Stephen and Frances B. Foster Foundation

David D. New
University of Tennessee
Health Science Center
Memphis, TN
#65

ARVO Foundation/ Elizabeth Anderson

Delores A. Davis
University of Alabama at
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Birmingham, AL
#406

Manoj Mohan Kulkarni
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Neuroscience
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ARVO Foundation/ G. M. Jager

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Technology
Wroclaw, Poland
#5877

ARVO Foundation/ Grant Wood Balkema Memorial

Mohamed T. El-Haddad
Cleveland Clinic
Foundation
Cleveland, OH
#5023

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**Studioe la Ricerca in
Oftalmologia**
Fabio Bignami
San Raffaele Scientific
Institute
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#1693

Angela Castegnaro
University of Padua
Padova, Italy
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University Vita-Salute
Scientific Institute
San Raffaele
Milano, Italy
#5859

Chiara Giacomini
San Raffaele
Scientific Institute
Milan, Italy
#3236

Andrea Russo
University of Brescia
Brescia, BS Italy
#3912

ARVO Foundation/ Joanne G. Angle

O'Donnell Sylvester
American University of
Nigeria
Yola, Nigeria
#395

ARVO Foundation/ Josh Wallman

Stephanie Britton
New England College of
Optometry
Boston, MA
#3598

ARVO Foundation/Kowa

Keita Fujii
Doshisha University
Kyotanabe, Japan
#3582

Masatoshi Hirayama
Keio University School of
Medicine
Tokyo, Tokyo Japan
#1300

ARVO Foundation/ Kreissig

Daniyar Dauletbekov
Oxford University
Oxford, UK
#3333

Sihem Lazreg
Cabinet Dr. Lazreg
Blida, Algeria
#1501

ARVO Foundation/ M. Velma Dobson

Christy Willoughby
University of Minnesota
Minneapolis, MN
#2570

ARVO Foundation/ Marj and Paulus

Bianca Gerendas
Medical University of
Vienna
Vienna, Austria
#1791

ARVO Foundation/ Murray and Jeanie Johnstone

Jesse David Lawrence
University of Pittsburgh
Pittsburgh, PA
#2646

ARVO Foundation/ NIHR Biomedical Research Centre for Ophthalmology

Jonathan Aboshiha
The Institute of
Ophthalmology
London, UK
#1416

John Bladen
Barts & The London School
of Medicine
London, UK
#1282

Matthew R. Edmunds
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Birmingham, UK
#4096

Doron Hickey
University of Oxford
Oxford, UK
#5768

Mariya Moosajee
UCL Institute of
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London, UK
#6431

Amanda Vernon
UCL Institute of
Ophthalmology
London, UK
#5173

ARVO Foundation/ Ocular Immunology and Uveitis Foundation

Elizabeth Shen
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San Francisco
San Francisco, CA
#6035

ARVO Foundation/ Pauline & Oswald Lapp

Jan Philip Kolb
Ludwig-Maximilians
University
Munich, Germany
#5018

See Travel Grants,
page 22

ViewPoint EyeTracker®

Scene Systems

Light weight and comfortable the eye tracking system can be worn without discomfort for long periods. View real-time gaze or recorded AVI 2.0 movies with gaze point shown clearly over the scene video. Easily adjustable in size and compatible with glasses.

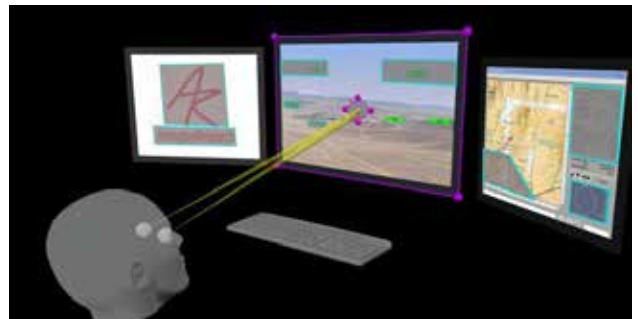
- * Compatible with glasses
- * Binocular version includes correction for parallax error
- * The lightest weight at less than 25g
- * No beam splitter
- * Wireless Video Monitoring
- * No head tracker is required
- * Laptop systems available
- * Fits any face



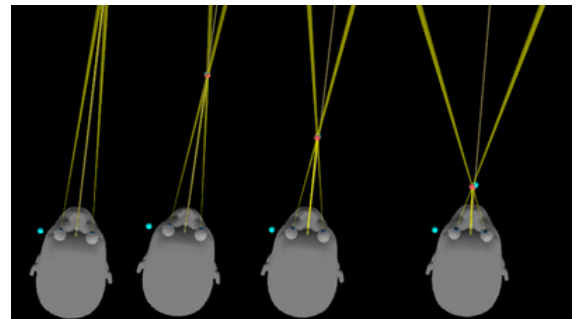
Problems Solved -

- Parallax errors and frame torsion errors are real problems with monocular systems. ViewPoint binocular systems eliminate these problems providing accuracy over the entire range of distance.
- Systems with fixed cameras and LEDs will not work with all eyewear. Our systems are fully adjustable to ensure that they work with eyeglasses.

3DWorkspace™

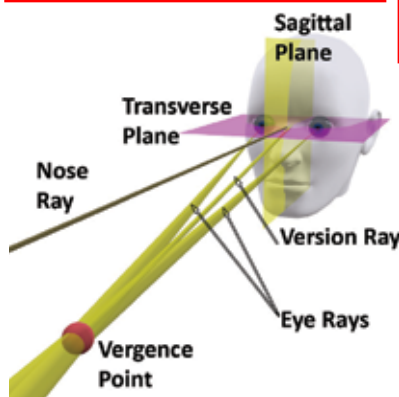


New 3DWorkspace™ and 3DViewPoint™ provide precise 3D depth information for 3D monitors, gaze across multiple monitors and curved displays.



400 Hz USB

HeadLock™ & Remote

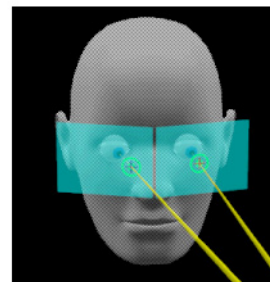


- * Vergence & Version Angles
- * 3D Scan Paths
- * Fast & Easy Setup
- * Intuitive 3D Graphics
- * Post-hoc ROI Specifications
- * Torsion across 3D Gaze
- * Heat, Fog and Torch Maps
- * Polygon/Concave ROI
- * Angular Calculations
- * Quaternian Transforms
- * MATLAB, Python, etc.
- * SDK

HMD Systems



Leading integrator of HMD eye tracking systems. We can design for any HMD.



- * Canted / Tilted Displays
- * Full or Partial Binocular Overlap
- * See-thru or Opaque Displays

Pupilometry



Torsion



Interfaces



Awards, Fellowships, Travel Grants and Chapter Affiliates

Travel Grants, *continued* from page 20

Lei Zhang
Cole Eye Institute,
Cleveland Clinic
Cleveland, OH
#4519

ARVO Foundation/ Ramon Dacheux II Memorial

Alan C. Rupp
Johns Hopkins University
Baltimore, MD
#1230

ARVO Foundation/ Retina Research Foundation

Kanika Agarwal
New York University
New York, NY
#5242

Oscar Carrasco-Zevallos
Duke University
Durham, TX
#1633

Shreyasi Choudhury
University of North Texas
Health Science Center
Fort Worth, TX
#2667

Irina De la Huerta
University of California,
San Francisco
San Francisco, CA
#714

Emily K. Deschler
Joslin Diabetes Center
Boston, MA
#2289

Philip J. DeSouza
Duke University School of
Medicine
Durham, NC
#1148

Maribel La Fontaine
Macula & Retina Institute
Glendale, CA
#4883

Yafeng Li
Perelman School of
Medicine, University of
Pennsylvania
Philadelphia, PA
#76

Hua Liu
University of Texas Medical
Branch
Galveston, TX
#5394

Jesse T. McCann
New York University
Medical Center
New York, NY
#1933

Monica M. Michelotti
University of Michigan
Ann Arbor, MI
#5586

Debarshi Mustafi
Case Western Reserve
University
Cleveland, OH
#4567
Sarah Ohlemacher
Indiana University –
Purdue University
Indianapolis
Indianapolis, IN
#1375

Samir N. Patel
Weill Cornell Medical College
New York, PA
#5929

Rebecca L. Pfeiffer
Moran Eye Center at the
University of Utah
Salt Lake City, UT
#829

Brian Christopher Prall
Emory University
McDonough, GA
#5816

Wanwisa Promsote
Georgia Regents University
Augusta, GA
#413

Michael C. Ryan
Oregon Health & Science
University
Portland, OR
#5930

Ramkumar Sabesan
University of California,
Berkeley
Berkeley, CA
#1652

Kimberly Wong
SUNY Upstate Medical
University
Syracuse, NY
#4034

Yunlu Xue
Washington University in
St Louis
St Louis, MO
#2371

Wan-Qing Yu
University of Southern
California
Los Angeles, CA
#6198

ARVO Foundation/ Richard Newton Lolley

Glenn P. Lobo
Cole Eye Institute, Cleveland
Clinic Foundation
Cleveland, OH
#3487

ARVO Foundation/ Santen Inc

Mehmet Agaoglu
University of Houston
Houston, TX
#2572

Elizabeth Chiang
Northwestern University
Feinberg School of
Medicine
Chicago, IL
#5476

Cirous Dehghani
Queensland University of
Technology
Brisbane, QLD Australia
#4859

Michelle Hendriks
Erasmus Medical Center
Rotterdam, Netherlands
#843

Flora Hui
The University of
Melbourne
Melbourne, VIC Australia
#2096



NAEVR
National Alliance For
Eye And Vision Research

Visit NAEVR Central at the ARVO Annual Meeting

Hours: Sunday – Wednesday, 9am – 4pm

Hosted by NAEVR's James Jorkasky (left) and David Epstein (right)

- Contact Congress to support vision research funding increases
- Learn about research funding resources, such as multiple Department of Defense (DOD) funding opportunities to meet critical vision research gaps

NAEVR's Defense-Related Vision Research Opportunities Session

Monday, May 5, 7:30 – 8:30am, S329

NAEVR has invited DOD representatives to speak about FY2014 funding opportunities and past DOD awardees to offer insights into how researchers can be most responsive to the funding Program Announcement.

eyerresearch.org



Awards, Fellowships, Travel Grants and Chapter Affiliates

Gun Ho Lee
Stanford University
Cupertino, CA
#2689

Ryan P. McNabb
Duke University Medical
Center
Durham, NC
#2175

Iris Miao
University of Houston
Houston, TX
#2619

Jyh Haur Woo
Singapore National Eye
Centre
Singapore
#4489

**ARVO Foundation/
Tyson Research
Initiative/PAOF/RRF**
Laura Emptage
University of Waterloo
Waterloo, ON Canada
#3366

Ka Yee So
University of California,
Berkeley
Berkeley, CA
#752

**ARVO Foundation/
Women in Eye and
Vision Research
(WEAVR)**

Srishti Kothari
The Massachusetts Eye
Research and Surgery
Institute
Philadelphia, PA
#844

Laura Schöllhorn
University of Cologne
Cologne, Germany
#5048

**ARVO
International
Affiliate Chapter
Travel Grants**

**Asociación de
Investigación en
Visión y Oftalmología
(AIVO)**

Melina Bordone
University of Buenos Aires/
CEFYBO, CONICET
Buenos Aire, Argentina

Paola Natalini
Universidad Nacional
del Sur
Buenos Aires, Argentina

Juan Pablo Real Sr
National University of
Cordoba
Cordoba, Argentina

ARVO NED

Jonas Kuiper
University Medical Center
Utrecht
Utrecht, Netherlands

Freekje van Asten
UMC St Radboud
Nijmegen, Netherlands

**ARVO Egypt
(ARVO-Egypt)**

Azza Abdelfattah Shehab
El Watany Eye Hospital
Cairo, Egypt

Maged Maher Salib
Roshdy
El Watany Eye Hospital
Cairo, Egypt

**Brazilian Research
Association for
Research in Vision
and Ophthalmology
(BRAVO)**

Carolina dos Santos Araújo
Universidade Federal do
Para
Belem, Brazil

Andrew Sousa Caires
Universidade Federal do
Para
Belem, Brazil

**Colegio Nacional
de Investigación en
Ciencias Visuales –
Mexico (MARVO)**

Carlos E. Estrada-Reyes
Institut of
Ophthalmology
Mexico City, Mexico

**Hungarian Association
for Research in Vision
and Ophthalmology
(HARVO)**

Lóránt Dienes
Semmelweis University
Budapest, Hungary

Kornélia Lenke Laurik
Semmelweis University
Budapest, Hungary

Anikó Rentka
University of Debrecen
Debrecen, Hungary

Eszter Szalai
University of Debrecen
Debrecen, Hungary

Boglárka Enikő Varga
Semmelweis University
Budapest, Hungary

**Indian Eye Research
Group – ARVO
(IERG – ARVO)**

Praveen Kumar Balne
LV Prasad Eye Institute
Hyderabad, India

**Israel Society for
Vision and Eye
Research (ISVER)**

Daniel Rappoport
Kaplan Medical Center
Rehovot, Israel

Ifat Sher-Rosenthal
The Maurice and Gabriela
Goldschleger Eye
Research Institute;
Sheba Medical Center
Tel-Hashomer, Israel

Adi Hanuka
Department of Electric
Engineering, Technion-
Israel Institute of
Technology
Haifa, Israel

Shachar Maidenbaum
Department of Medical
Neurobiology, Hebrew
University of Jerusalem
Jerusalem, Israel

ARVO Italy (IT-ARVO)

Manuele Michelessi
University of Tor Vergata
Rome, Italy

**South-East European
Association for
Research in Vision
and Ophthalmology
(SEE-ARVO)**

Nikolay Lachezarov
Surchev
Specialized Eye Hospital
Varna, Bulgaria

**Nicolas Bazan,
MD, Travel
Fellowships**

Fernanda Pascuet
First Private Eyes Hospital
Buenos Aires, Argentina
#5291

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date**

MAY 3 – 7 | DENVER

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In Memoriam

ARVO would like to recognize and honor the members that we lost in 2013 and 2014.

Aug. 28, 2013

Bernard Becker, MD, FARVO

Washington University School of Medicine
St Louis, MO

*GL Section, 1966 ARVO President
1958 Friedenwald Awardee
1980 Proctor Medal Awardee
1995 Weisenfeld Awardee*



June 19, 2013

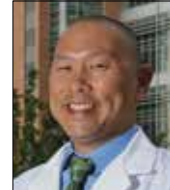
Raili Kerppola, MBA, PhD

ONL Therapeutics
Ann Arbor, MI
RE Section

May 1, 2013

Deegan Lew, OD

University of Colorado
Aurora, CO
CO Section



March 26, 2013

Chandler Dawson, MD, FARVO

University of California, San Francisco
Mill Valley, CA
IM Section

Aug. 26, 2013

Francis Marzulli, MD

National Academies/National Research Council
Bethesda, MD
PH Section

March 6, 2014



David L. Epstein, MMM, MD

Duke Eye Center
Durham, NC 27710
*GL Section, 1992–1993 ARVO President
2013 Weisenfeld Awardee*



Feb. 23, 2014

Melvin Rubin, MD

Department of Ophthalmology
University of Florida
Gainesville, FL
RE Section, 1979 ARVO President

Oct. 9, 2013

James M. Hill, PhD, FARVO

Louisiana State University
Health Sciences Center
New Orleans, LA
IM Section



April 29, 2013

Stephen J. Ryan, Jr., MD, FARVO

Doheny Eye Institute
Los Angeles, CA
*RE Section, 1993 – 2013 NAEVR President
1988 Kupfer Awardee*



June 1, 2013



Ian P. Howard, PhD

York University
Toronto, Ontario
Canada
VI Section



March 17, 2014

Ronald E. Smith, MD, FARVO

Doheny Eye Institute
Los Angeles, CA
IM Section, NAEVR Board Member

Sept. 22, 2013

David H. Hubel, MD

Department of Neurobiology
Harvard Medical School
Boston, MA
*Nobel Laureate, 1981
VN Section, 1975 Friedenwald Awardee*



June 4, 2013

Ramesh C. Tripathi

University of South Carolina
Columbia, SC
GL Section



We're proud of our members and their contributions to ARVO and the vision and eye research community. If you know of a member that has passed away, please let us know, arvo.org/submitobit.

Continuing Medical Education Credits

The objective of the 2014 Annual Meeting is to provide a forum for the exchange of new ophthalmology and vision research by scientists and investigators.

2014 Annual Meeting Accreditation Information

The Association for Research in Vision and Ophthalmology (ARVO) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

ARVO designates the 2014 Annual Meeting, a live activity, for a maximum of 22.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The following 2014 Annual Meeting formats are not eligible for *AMA PRA Category 1 Credit™*: ALCON/Keynote series, Award Lectures, Posters, Workshops, Special Interest Groups (SIGs), and the Research Grant Administrators Program. See the list of CME eligible sessions for more details.

ARVO designates live full-day Education Courses, for a maximum of 6.5 *AMA PRA Category 1 Credits™* and live half-day Education courses for a maximum of 3.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in these activities.

Education courses that are eligible for *AMA PRA Category 1 Credit™* include: New Insights in Understanding Diabetic Retinopathy; Predicting, Measuring and Treating Changes in Corneal Biomechanics; and Telehealth Methods for Eye Disease: Focus on Diabetic Retinopathy, Glaucoma and Retinopathy of Prematurity.

The AMA has determined that physicians not licensed in the USA who participate in this CME activity are eligible for *AMA PRA Category 1 Credit™*.

Professional Practice Gap and Needs Statement

Clinicians need access to the most current research in ophthalmology and vision science in order to learn more about cellular functions within the eye and new pre-clinical possibilities. Exposure to this new information will enhance the clinician's understanding of eye and vision disease processes to the benefit of their patients.

Competencies

This activity was planned in the context of the following IOM/ACGME competencies: Medical Knowledge, Systems Based Practice, Working as part of Interdisciplinary Teams, and Practicing Evidence-based Medicine.

Target Audience

The Annual Meeting is targeted to clinical practitioners, research scientists, and medical education professionals involved in ophthalmology and vision research and treatment.

Learning Objectives

Upon participation in this activity, attendees will be able to:

- Discuss the ophthalmology and vision research underway relevant to their areas of interest
- Describe the methods being used by researchers and practitioners in these fields
- Integrate the discovery of new methods/ideas into one's own practice

Disclosure Policy

It is the policy of ARVO to ensure balance, independent objectivity, and scientific rigor in all its sponsored educational programs. All persons in a position to control the content of a continuing medical education activity are required to disclose to ARVO and the program audience any relevant commercial relationships held within the past 12 months by themselves, their spouses, and/or their partners. The disclosure must include the name of the commercial interest and the nature of the relationship. The Continuing Medical Education Committee reviews each disclosure for real and potential conflicts of interest and removes sessions from the CME program if conflicts are identified. See the ARVO Commercial Relationships Policy on the first page of the Commercial Relationships Index for more details.

Evaluation/CME Certificate and Certificate of Attendance

CME Certificates for attending CME-eligible sessions and Certificates of Attendance are accessible via ARVO's online evaluation system at <http://www.planion.com/Web.Admin/Login?Account=ARVO>. All evaluations and requests for credit should be entered into the system by 12 midnight EST, on Monday, **September 1, 2014**.

Attendees who preregistered for the Education Courses by Monday, April 28, 2014, can submit evaluations starting Saturday, May 3, 2014. Those who preregister for the Annual Meeting by Monday, April 28, can submit evaluations starting on Sunday, May 4. All others may access the system beginning Wednesday, May 14, 2014. Use your ARVO ID and Password, or click "forgot your password" to log in.

Certificates are official. You will not receive additional documentation. You may log on to update record/print certificate(s) anytime. Questions? Email: education@arvo.org

Disclaimer

The Annual Meeting provides a forum for the open exchange and discussion of research results and scientific advancements in the field of ophthalmology. ARVO makes no representation or warranty as to the truth, originality, or accuracy of the information presented at the meeting or in materials distributed in connection with it. The views expressed by the individual speakers are not necessarily the views of ARVO. ARVO supports the ACCME's policy on evidence-based content and encourages faculty to adhere to these standards when planning a presentation.

Contact information

Any questions related to CME may be directed to ARVO staff at education@arvo.org

Continuing Medical Education Sessions

Certificates of Attendance and Annual Meeting Evaluations will be available online at arvo.org/cme after the Annual Meeting. Certificates can be updated/printed at any time. Questions? Email: education@arvo.org. The following sessions of the ARVO 2014 Annual Meeting are eligible for CME:

Session #	Session Title		
163	Basic/Clinical Lecture: From Bench to Therapy: Translating Molecular Genetics into Clinical Practice	467	Lens genetics and gene expression
202	ipRGCs	525	Photoreceptors
206	Mechanisms of Axonal Damage in Optic Nerve Disease	528	Visual Development and Amblyopia
209	Myopia — going beyond the near-work hypothesis	530	Fundamental Mechanisms of Retinal Diseases
210	Functional, Evolutionary and Translational Genomics	532	Age-Related Macular Degeneration — What puts you at risk?
230	New ideas in glaucoma	533	Protein Interactions and Trafficking
231	Anterior segment problems in world-wide populations	535	Cataractogenesis
232	Non-Coding Variations of the Genome and Their Alterations in Ocular Disease	537	Application of molecular biology to corneal regenerative medicine
233	The fiber cell environment		
234	Corneal Infection and Inflammation		
249	Exomes and Eye Disease — Challenges and Successes		
268	Targets for Neurodegeneration and Neuroprotection		
269	Molecular mechanisms of AMD		
303	New Perspectives on Color Vision		
304	Eye movements		
306	Stem Cells: Biology and Therapeutic Applications		
307	Life-and-death consequences of visual impairment		
308	Mechanisms in retinal degeneration		
328	Mechanisms in retinal angiogenesis and retinopathy		
330	Phototransduction		
331	Myopia		
333	The Microbiome of the Eye and Beyond — How the Microbiome Influences Resistance against Opportunistic Pathogens		
351	Binocular Vision Meets Low Vision		
364	Leading Edge — New Directions in the Analysis of Retinal Image Motion		
367	Neuro-ophthalmology		
371	Lens cell survival, development, and aging		
372	Inflammatory Tissue Damage and Immunoregulation		
402	AMD Imaging and Phenotyping		
405	Retinal Development		
408	Crystallins: form and function		
409	Hot topics in infection and immunity		
410	Ocular surface health and disease, corneal dystrophies and genetics		
427	Synaptic mechanisms		
429	Color Vision		
431	Biomechanics and blood flow		
432	RPE Cell Biology		
433	New Developments in Ophthalmic Genetics		
435	Retinopathy of Prematurity		
436	Current Topics in Anatomy		
438	Ocular Immune Responses		
439	Corneal stoma and wound repair		
463	Retinal degeneration and treatment		
466	Protein Function in Glaucoma		

CME Committee Members and Disclosures

Chair

Bennie H. Jeng, MD
University of Maryland School of Medicine
Baltimore, MD

Samuel C. Yiu, MD, PhD
Wilmer Eye Institute, Johns Hopkins University Medical Center
Baltimore, MD

Chair Elect

Karen M. Joos, MD, PhD, FARVO
Vanderbilt University
Nashville, TN
**CR — Vanderbilt University (P)*

Ex Officio

Craig E. Crosson, PhD, FARVO
Medical University of South Carolina
Charleston, SC
**CR — Allmera Sciences (C); Allmera Sciences, Lexicon Pharmaceuticals Inc., Ocular Services on Demand (OSOD) (F)*

Members

Esen K. Akpek, MD
Wilmer Eye Institute, Johns Hopkins University Medical Center
Baltimore, MD
**CR — Nicox (C); Allergan, Inc. (F); Biogen Idec (R)*

Sir Peng Tee Khaw, MD, PhD, FARVO
NIHR Biomedical Research Centre
London, UK

Anat Galor, MD
Bascom Palmer
Miami, FL

**CR — Alcon, Aquesys, Bausch+Lomb, Teva Pharmaceuticals (C); Lumemed (I); Use of matrix metalloproteinase inhibitors for prevention of scarring, slow release preparations, stem cells for adult eyes (P) Bausch+Lomb, Teva Pharmaceuticals (R)*

Shashi D. Ganti, MBA, MD
Porterville, CA

William F. Mieler, MD, FARVO
University of Illinois at Chicago
Chicago, IL

Judy E. Kim, MD
Medical College of Wisconsin
Milwaukee, WI
**CR — ThromboGenics (C)*

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Marlyn P. Langford, PhD
Louisiana State University Health Science Center
New Orleans, LA

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Flinders University
Bedford Park SA, Australia

Jie Ma
Schepens Eye Research Institute
Boston, MA

**CR indicates a commercial relationship. See code and financial relationship description in box on page 8. See www.arvo.org/amindices for commercial relationship descriptions of paper and posters sessions*